

1 SILICON NANOPARTICLE FIELD EFFECT
2 TRANSISTOR AND TRANSISTOR MEMORY DEVICE

3 ABSTRACT

4 A silicon nanoparticle transistor and transistor memory device. The transistor
5 of the invention has silicon nanoparticles, dimensioned on the order of 1nm, in a gate area
6 of a field effect transistor. The resulting transistor is a transistor in which single electron flow
7 controls operation of the transistor. Room temperature operation is possible with the novel
8 transistor structure by radiation assistance, with radiation being directed toward the silicon
9 nanoparticles to create necessary holes in the quantum structure for the flow of an electron.
10 The transistor of the invention also forms the basis for a memory device. The device is a
11 flash memory device which will store electrical charge instead of magnetic effects.